## REMARKS

Claims 1-6, 8-15, and 19-43 are pending in this application. Non-elected claims 14, 22-25, 27-38, 42, and 43 have been withdrawn from consideration by the Examiner. By this Amendment, claims 1-6, 8-15, 19-26, and 39-41 are amended, and claims 16-18 are canceled. Support for the amendments to the claims may be found, for example, in the original claims and in the specification at page 4, line 3 to page 5, line 14 and page 5, lines 28-32. No new matter is added.

In view of the foregoing amendments and following remarks, reconsideration and allowance are respectfully requested.

### I. Enablement Rejection Under 35 U.S.C. §112, First Paragraph

The Office Action rejects claims 1, 8-10, and 39 under the enablement requirement of 35 U.S.C. §112, first paragraph. Applicants respectfully traverse the rejection.

The Office Action asserts that the claims encompass "total prevention of alopecia regardless of cause or types." See Office Action, page 3. By this Amendment, claims 1 and 39 are amended to be directed to "treating or reducing the likelihood of miniaturization of the hair follicle and/or alopecia" (emphasis added). Claims 1 and 39 thus do not require 100% prevention, but only require that hair follicle miniaturization and/or alopecia is treated or the likelihood of developing hair follicle miniaturization and/or alopecia is reduced. This subject matter is clearly enabled by the present specification. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

### II. Written Description Rejection Under 35 U.S.C. §112, First Paragraph

The Office Action rejects claim 1 under the written description requirement of 35 U.S.C. §112, first paragraph. Applicants respectfully traverse the rejection.

The Office Action asserts that Applicants' disclosure does not appear to support "the oral composition comprises at least 21.7 wt % of the taurine, hypotaurine, and/or salts

thereof." See Office Action, page 6. By this Amendment, claim 1 is amended to delete this claim feature without conceding the propriety of the rejection and without disclaimer, rendering the rejection moot. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

## III. Rejection Under 35 U.S.C. §103

The Office Action rejects claims 1-6, 8-13, 15, 19, 20, 21, 26, and 39-41 under 35 U.S.C. §103(a) as obvious over the combination of JP 2002-097116 to Hamada et al, U.S. Patent No. 5,639,785 to Kung, and U.S. Patent No. 5,582,839 to McCarty. Applicants respectfully traverse the rejection.

Claims 1 and 39 are directed to a method of treating or reducing the likelihood of hair follicle miniaturization and/or alopecia that requires administering an effective amount of "an oral composition comprising at least one of taurine, hypotaurine, salts of taurine and salts of hypotaurine, and at least one polyphenol." The combination of applied references would not have rendered obvious the claimed method for at least the following reasons.

Hamada is silent on orally administering a composition comprising taurine for treating or reducing the likelihood of hair follicle miniaturization and/or alopecia. Instead, Hamada discloses topically applying compositions comprising taurine (e.g., lotions, creams, and shampoos) as an active agent to promote hair growth. See Hamada, paragraphs [0067], [0068], and [0079].

The Office Action acknowledges that "Hamada fails to teach oral administration of taurine." See Office Action, page 6. However, the Office Action asserts that Kung establishes "that it is well known and conventional practice in [the] pharmaceutical art[s] to administer active compounds in . . . oral and topical formulations, among others." See Office Action, pages 6-7. The Office Action points to minoxidil and daidzein as examples of

compositions that can be both orally and topically administered to treat hair loss. See Office Action, page 7 and Kung, column 1, lines 15-30.

The Office Action makes no findings on why two compounds--minoxidil and daidzein--out of numerous compounds investigated to treat hair loss in the art establish that any other active agent can be effective when either orally or topically administered. For example, the Office Action makes no findings on (1) what properties--e.g., chemical properties--of minoxidil and daidzein make them capable of being effective when both orally and topically administered, and (2) how the chemical properties of minoxidil and daidzein are related to the chemical properties of taurine such that an ordinarily skilled artisan would have recognized that, because these two different compounds are effective when orally and topically administered, taurine would also be effective when orally and topically administered. Instead, the Office Action appears to be asserting that any compound, including taurine, for treating alopecia is subject to both oral and topical administration and will be effective using either route, because two different active ingredients purported to treat hair loss are effective when orally and topically administered. An ordinarily skilled artisan would not have had a reasonable expectation of success. Whether a compound is effective in treating alopecia both orally and topically is unpredictable without some finding that a skilled artisan would have expected taurine to be effective via either route based on more than other compounds being superficially related to taurine in that they all treat the same condition. See MPEP §2143.02 (requiring a reasonable expectation of success to establish obviousness).

The Office Action further applies McCarty for allegedly establishing that "oral administration of taurine salt already has been in practice." See Office Action, page 7. McCarty discloses intravenously and orally administering a magnesium-taurine compound for treating acute cardiac conditions. See, e.g., McCarty, abstract. However, McCarty fails to disclose that taurine can be orally administered to effectively treat alopecia. An ordinarily

skilled artisan at most would have recognized McCarty as providing a reason to intravenously administer taurine to treat a condition if orally administering taurine to treat the same condition was known to be effective, and vice versa. But McCarty would not have led an ordinarily skilled artisan to substitute topically administering taurine with orally administering taurine to treat a condition, particularly not a condition that was not addressed in McCarty. An ordinarily skilled artisan would likewise not have recognized Hamada as teaching that topical and oral administration are interchangeable because Hamada is only directed to topical administration. Thus, the Office Action fails to establish that an ordinarily skilled artisan would have reasonably expected that orally administering taurine would be effective in treating or reducing the likelihood of hair follicle miniaturization and/or alopecia, because no reference establishes orally administering a composition comprising taurine could have been substituted for topically administering a composition comprising taurine to treat alopecia. See MPEP §2143.02.

Additionally, claims 1 and 39 require administering "an oral composition comprising at least one of taurine, hypotaurine, salts of taurine and salts of hypotaurine, and at least one polyphenol" (emphasis added). The applied references fail to disclose the claimed composition and would not have rendered obvious the same. At most, Hamada would have led a skilled artisan to topically administer a composition comprising taurine, and Kung would have led a skilled artisan to orally administer a composition comprising isoflavanoid derivatives as two separate treatments for hair loss whether used at the same time or not.

However, as evidenced by Applicants' disclosure and at least one post-filing publication, orally administering a composition comprising both taurine and polyphenols is effective in decreasing hair loss and improving hair volume, density, strength, tonus, and brightness. See specification at page 41 (Example 26) and "A New Nutritional

Supplementation is Effective Against Hair Loss and Improves Hair Quality" by Bouilly-Gauthier et al. (attached).

For at least these reasons, claims 1 and 39 would not have been rendered obvious by Hamada, Kung, and McCarty. Claims 2-6, 8-13, 15, 19, 20, 21, 26, 40, and 41 variously depend from claims 1 and 39 and thus also would not have been rendered obvious by Hamada, Kung, and McCarty. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

## IV. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of the application are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,

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WPB:MCB/csm

Attachments:
Petition for Extension of Time
"A New Nutritional Supplementation is Effective Against Hair Loss and Improves Hair Quality" by Bouilly-Gauthier et al.

Date: May 28, 2009

**OLIFF & BERRIDGE, PLC**
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# A NEW NUTRITIONAL SUPPLEMENTATION IS EFFECTIVE AGAINST HAIR LOSS AND IMPROVES HAIR QUALITY

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## INTRODUCTION

Excessive hair loss is a very common problem affecting up to 80% of men and 50% of women in their life time (Tosti, 2005). It is a multifactor process involving increased 5-alpha-reductase activity, inflammatory infiltrates, fibrosis around hair follicles, and an impaired microcirculation (Jaworsky, 1992 ; Mahé, 1998 ; Chen, 2002 ; Hoffman, 2001 ; Hernandez, 2004).
In order to fight against the major factors of hair loss, Laboratoires innéov have developed a new nutritional supplement combining polyunsaturated fatty acids (PUFAs), taurine, vitamins C and E, lycopene, plant polyphenols and zinc.
A clinical trial was designed to evaluate the efficacy of this specific supplementation with regard to hair loss and hair quality. This poster summarizes the main results obtained in this clinical trial.

## MATERIALS AND METHODS

Study design
This study was conducted under dermatological control. This was a randomized, single-blind *versus* untreated control group study.

Population
60 women with hair loss (hair density on vertex lower than 250 hairs/cm²) and aged from 30 to 50 years (mean = 41 ± 6 year) were included in the study. They were randomly assigned to either the supplemented group (*verum*, n=40) or the control group (n=20), according to their inclusion order.

Treatment
Composition of tested supplement (mg per day): ω3 and ω6 PUFAs (195), taurine (75), vitamin C (15), vitamin E (2.5), lycopene (0.5), plant polyphenols (140) and zinc (7.5).
Supplementation duration: 16 weeks (Oct 2007-Fev 2008).

TrichoScan® evaluation
Hair cycle parameters were analysed on vertex using TrichoScan® method (Hoffman, 2001) at week 0 (W0) and after 8 (W8) and 16 (W16) weeks of supplementation.
3 days after clipping, hairs were dyed and 3 digital pictures (0.651 cm²) were taken in a 2 cm² area on vertex. Hair density, anagen and telogen rates in tested area were calculated by the TrichoScan® software after verification of the images by a technician to ensure that no hair has been missed.

Clinical evaluation and self-assesement
Clinical examinations as well as self-assessment were carried out on week 0 and after 8 and 16 weeks of supplementation. Hair loss and hair quality were evaluated using a 6-points scale (from 1 to 6, the lower value corresponding to the best score), without looking at the previous evaluations. In addition, the overall evolution of hair loss and hair quality was assessed after 16 weeks by the dermatologist and the volunteers (*verum* group only).

Statistical analysis
For the main parameters (age, hair number, anagen rate and telogen rate in test area), homogeneity was checked at baseline using a Wilcoxon rank sum test for continuous variables and Fisher's exact test for nominal or ordinal variables. All 60 volunteers completed the study and were included in the statistical analysis.
Intra group analysis: for each parameter, each time (W8 and W16) was compared to baseline (W0) using an ANOVA test (GEE model).
Inter group analysis: for each parameter, the values at W0, W8 and W16 and the pre-post differences W8-W0 and W16-W0 were compared using an ANOVA test (GEE model).
All calculated p-values have been interpreted in an explorative manner. An alpha-level of 5% (p<0.05) has been used.

## RESULTS

Baseline population: The two groups were homogenous at baseline regarding anagen and telogen rates and hair density measured with TrichoScan® method in tested area.

### The nutritional supplement improved hair cycle and hair density

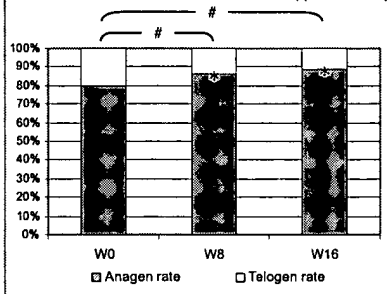


Figure 1: Evolution of anagen and telogen rates measured in the *verum* group with the TrichoScan® method.
Following nutritional supplementation intake, there was a statistically significant
I) increase in anagen rate ;
II) decrease in telogen rate
while there was no change in the control group (data not shown)
*: comparison *versus* baseline, p<0.05 ;
#: comparison of evolutions between *verum* and control, p<0.05

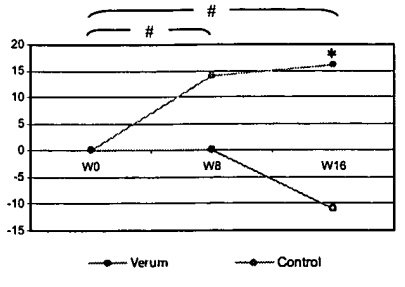


Figure 2: Evolution of hair density measured in tested area with TrichoScan® method in *verum* and control groups.
Hair number increased significantly in the *verum* group after 16 weeks of supplementation.
*: comparison *versus* baseline, p<0.05 ;
#: comparison of evolutions between *verum* and control, p<0.05

TrichoScan® measures showed that the nutritional supplement was able to restore a more balanced hair cycle: from 8 weeks of supplementation telogen rate was decreased and anagen rate was increased. This improvement in hair cycle was accompanied by an increase in hair density.

### The nutritional supplement improved hair loss and hair quality

Dermatologist evaluation showed statistically significant improvement *versus* control group in hair loss (Fig. 3), volume (Fig. 3), density, diameter, brightness, tonus and greasiness.
Volunteers' self-assessment showed statistically significant improvement *versus* control group in hair volume, density and strength. After the supplementation, they observed that untangling was easier.

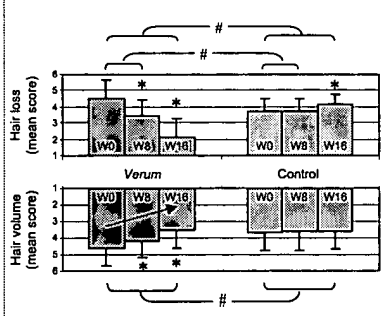


Figure 3: Evolution of hair loss and hair volume evaluated by the dermatologist (6-points scale) at W0, W8 and W16, in *verum* and control groups.
Hair loss decreased significantly in the *verum* group from 8 weeks of supplementation. On the contrary, it increased in control group after 16 weeks. Hair volume increased in *verum* group, while it did not change in control group.
*: comparison *versus* baseline, p<0.05 ;
#: comparison of evolutions between *verum* and control, p<0.05

| Improvement of: | Clinical evaluation | Self assessment |
|---|---|---|
| Hair loss | 87% | 75% |
| Hair volume | 80% | 72% |
| Hair density | 77% | 70% |
| Hair strength | ND | 77% |
| Hair tonus | 75% | ND |
| Hair brightness | 62% | 55% |

Table 1: % of volunteers whose hair loss, density, volume, strength, tonus and brightness were improved after 16 weeks of supplementation, according to the dermatologist (clinical evaluation) and to the volunteers (self-assessment)
For each parameter, there was an improvement for a large majority of volunteers, according to both dermatologist and volunteers.
ND = not determined.
According to the volunteers, hair loss decreased during washing and brushing from 8 weeks of supplementation as well as during drying, on pillow and clothes after 16 weeks. These improvements were significant *versus* control group (p<0.05).

Clinical evaluation and self-assessment underlined the beneficial effect of the nutritional supplement on hair loss and hair quality. Hair loss, volume, density, strength, tonus and brightness were significantly improved in comparison to control group.

## CONCLUSION

This clinical trial showed that the nutritional supplement with PUFAs, taurine, vitamins C and E, lycopene, plant polyphenols and zinc was able to restore a more balanced hair cycle in women with excessive hair loss. Hair loss decreased and hair growth was boosted, leading to visibly greater hair density and hair volume. In addition, hair quality was improved: hairs became stronger, more tonic and shinier.

Similar results were recently recorded in men in a 16-week clinical trial that evaluated the same nutritional supplement with the same protocol. The study population was composed of 68 men aged from 35 to 65 years old, with a weak hair density and a Hamilton stage from I to III. TrichoScan® evaluation confirmed that the nutritional supplement is able to restore a more balanced hair cycle (increase in anagen rate and decrease in telogen rate), resulting in an increase of hair density. Both dermatologist and volunteers reported a decrease of hair loss, and an improvement of hair diameter and shininess.

Thus the nutritional supplementation is able to regulate hair cycle resulting in a decrease of hair loss and an increase of hair density, and to improve hair quality in both men and women.

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